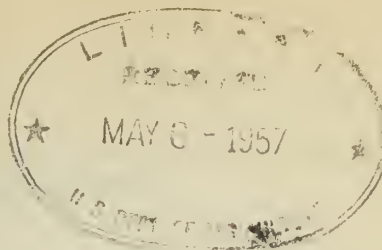


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SNOW SURVEYS AND IRRIGATION WATER FORECASTS

FOR OREGON

AS OF

FEBRUARY 1, 1939

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Issued February 9, 1939
Medford Branch of the Oregon Experiment Station
Medford, Oregon

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The following data pertaining to snow surveys and irrigation water-supply forecasts are provided by the Bureau of Agricultural Engineering of the U. S. Department of Agriculture, in cooperation with the Oregon State Engineer, Oregon Experiment Station and other Federal, State and local organizations. 1/

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1/ The snow measurements are made principally by field personnel of the following organizations:

STATE

Oregon State Engineer and corps of State Watermasters
Oregon Agricultural Experiment Station
Oregon State Highway Engineers
Idaho Cooperative Snow Surveys
Nevada Cooperative Snow Surveys

FEDERAL

Department of Agriculture
Bureau of Agricultural Engineering
Forest Service
Weather Bureau
Biological Survey
Department of Interior
Geological Survey
Bureau of Reclamation
Indian Service
National Park Service

PUBLIC UTILITIES

The California Oregon Power Company
Eastern Oregon Light and Power Company
Portland General Electric Company

MUNICIPALITIES

City of La Grande
City of The Dalles
City of Corvallis

MUNICIPAL DISTRICTS

Deschutes County Municipal Improvement District
Medford & Talent Irrigation Districts
Warm Springs Irrigation District
Ochoco Irrigation District
Grants Pass Irrigation District

2/ Water content determined by melting a measured sample. (The California Oregon Power Company Station)

3/ N. R. = No Report.

STATUS OF VALLEY PRECIPITATION AS OF OCTOBER 1 TO DATE

Month	Oct.		Nov.		Dec.		Jan.		Period	
Section	P	D	P	D	P	D	P	D	P	D
S. E.	0.99	+0.38	0.88	-0.09	0.46	-0.59	0.8	-0.3	3.13	-0.60
S. C.	1.23	+0.26	1.68	-0.03	0.86	-0.89	1.4	-0.1	5.17	-0.76
N. C.	0.88	+0.02	1.25	-0.49	0.89	-0.63	.6	-1.1	3.62	-2.20
Col.Riv.	1.18	+0.12	1.05	-0.70	0.80	-0.80	1.1	-0.5	4.13	-1.88
Wal.Mts.	2.77	+1.96	2.01	-0.89	0.79	-1.28	.5	-1.1	6.07	-1.31
Blue Mts.	1.51	+0.16	2.28	+0.36	1.25	-0.77	1.0	-1.2	5.77	-1.45
Southern	1.10	-0.99	3.51	-0.38	2.66	-1.39	3.5	-0.4	10.77	-3.16
Area	1.38	+0.27	1.81	-0.32	1.10	-0.91	1.3	-0.7	5.52	-1.62

P - Inches precipitation.

D - Inches departure from normal.

S. E. - Southeastern Oregon range lands, Harney and Malheur Counties.

S. C. - Southcentral Oregon range lands, Lake County and Klamath County, except the Cascade Mountains.

N. C. - Northcentral Oregon wheat and range lands, Crook, Deschutes, Jefferson, Wheeler and part of Grant Counties.

Col.Riv.-Columbia River area, wheat and range lands, Gilliam, Morrow, Sherman, Wasco and part of Umatilla Counties.

Wal.Mts.-Wallowa Mountain area, forest and range lands, Wallowa and part of Baker County.

Blue Mts.- The Blue Mountain forest and range area, Union and parts of Baker, Grant and Umatilla Counties.

Southern - Southern Oregon irrigated section, Jackson and Josephine Counties

Note: Data for the last month shown above are preliminary only, as they are based on a few stations only. Data for earlier months have been corrected to include all the stations in climatological data for the area.

STATUS OF RESERVOIR STORAGE AS OF FEBRUARY FIRST

In the following tabulation, water storage in acre feet in some selected Oregon reservoirs as of about February 1, 1939 is compared with storage as of approximately the same time in 1938 and 1937.

Storage Reservoir	Stream Basin	Capacity Acre Ft.	Acre Feet in Storage		
			About 2-1-39	About 2-1-38	About 2-1-37
Agency Valley	Malheur	60,000	41,060	22,110	22,340
Antelope	Owyhee	33,434	3,750	10,000**	5,000**
Clear Lake	Lost River	440,240*	229,510*	105,480*	45,480
Crane Prairie	Deschutes	55,220 ^o	21,080	40,550	35,390
Crescent Lake	Deschutes	80,000	54,280	33,570	25,960
Drew Creek	Goose Lake	62,500	32,520	41,100	33,100
Emigrant Gap	Rogue	8,200	1,859	7,568	Dry
Fish Lake	Rogue	7,720	5,800	3,911	4,820
Four Mile Lake	Klamath***	14,000	9,927	11,434	7,550
Gerber	Klamath	94,000	35,830	44,560	36,370
Hyatt Prairie	Klamath***	16,000	10,230	6,891	3,500
McKay	Umatilla	75,000	21,440	21,440	4,021
Ochoco	Crooked	47,500	21,620	10,780	540
Owyhee	Owyhee	715,000	521,300	571,980	629,390
Upper Klamath Lake	Klamath	524,800*	354,600*	435,200*	295,150*
Wallowa Lake	Wallowa	40,920	36,380	12,880	6,960
Warm Springs	Malheur	170,000	137,280	30,840	12,440
Willow Creek	Malheur	26,000	4,000**	Dry	Dry

* Available for use.

** Estimated.

*** By ditch to Rogue River side.

^o 40,500 by agreement.

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

For Oregon as a whole, and for elevations above 5,000 feet, of the 36 courses reporting, 13 were measured last month, 34 were measured about February 1, 1938, 22 were measured about February 1, 1937 and 19 were measured about February 1, 1936.

Comparison of records on these courses for the dates mentioned follows:

Snow cover (water content) now present above 5,000 feet:

As percent of that present about Jan. 1, 1939 -----	180
As percent of that present about Feb. 1, 1938 -----	150
As percent of that present about Feb. 1, 1937 -----	76
As percent of that present about Feb. 1, 1936 -----	49

For elevations from 3,000 to 5,000 feet, of the 21 courses reporting about February 1, 1939, 6 were measured last month, 18 were measured about February 1, 1938, 13 were measured about February 1, 1937 and 6 were measured about February 1, 1936.

Comparison of records on these courses for the dates mentioned follows:

Snow cover (water content) now present from 3,000 to 5,000 feet elev.

As percent of that present about Jan. 1, 1939 -----	291
As percent of that present about Feb. 1, 1938 -----	163
As percent of that present about Feb. 1, 1937 -----	45
As percent of that present about Feb. 1, 1936 -----	47

Snow water content on 85 percent of all of the courses is greater than at this time in 1938, but with two exceptions only is very materially less than on about February 1 of either 1936 or 1937. Records on only a few of the courses extend back of 1936, but those records of longer length show that present snow water contents are below the 10 year average on most snow courses.

January precipitation of 1939 occurred partly as snow and partly as rain, especially at the lower elevations. This was unlike either 1938, when a large part of the early winter watershed precipitation came in the form of rain, or 1937, when January precipitation, occurring largely in the form of snow at the lower elevations, resulted in greater average snow depth than usual at those levels.

Soil of the watersheds is mostly unfrozen or frozen only to depths of one-half to four inches, and in most locations is apparently quite wet. This condition is similar to that of February 1, 1938, but unlike that of February 1, 1937 when watershed soils, while unfrozen, generally were found to be very dry beneath the snow. The greatest depth of soil freezing reported in 1939 is 16 inches at Chemult.

There is evidence to indicate that if watershed soils are well wetted before being covered by snow, the water yield to streams from a given amount of snow will be greater than from the same snow water content deposited on dry watershed soils. Therefore, the anticipated 1939 stream run-off should not be reduced from that of 1936 or 1937 in the same ratio that snow water content may be decreased, but may not be promoted above 1938 in the same ratio that snow water content may be finally increased.

Generally heavy storms beginning during the measurement period have increased the snow cover moderately to materially over the amounts reported herein for the last of January, but continued heavy snow will be required to assure a satisfactory outlook in some parts of the State, especially those lacking in storage facilities. Final seasonal snow measurements upon which definite forecasts are based, will be made during the closing days of March, and additional progress measurements will be made during the last few days of February.

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TRIBUTARY BASINS (Primary & Secondary & Snow Courses)	LOCATION		SNOW COVER MEASUREMENTS About February 1, 1939				AVERAGE WATER DEPTH (INCHES)			
	Oregon Number	Sec. Twp. Range	Elev.	Date	Avg. Snow Depth (In.)	Avg. Water Depth (In.)	One Month ago (1-1-39)	One Year ago (2-1-38)	Two Years ago (2-1-37)	Three Years ago (2-1-36)

U P P E R C O L U M B I A D R A I N A G E

L O W E R S N A K E I N O R E G O N

MAHEUR RIVER

Blue Mountain Spring	133	21	15S	35E	5900	1-31	36.2	7.4	5.1	9.0	8.2	13.4
Rock Spring	134	23	18S	32E	5100	1-31	11.7	3.7	1.5	1.3	4.2	8.7
Stinking Water	135	6	21S	37E	4800		No report		-	2.7	-	-
Lake Creek	136	10	16S	33 $\frac{1}{2}$ E	5120	2-1	27.3	6.5	-	7.8	-	-
Crane Prairie	137	24	16S	34E	5375	1-31	25.2	5.4	-	4.1	-	-

BURNT RIVER

Blue Mountain Summit	141	6	12S	36E	5098	1-30	23.7	5.0	3.7	1.8	6.3	7.8
Dooley Mountain	156	32	11S	40E	5430	1-31	15.2	2.9	0.9	-	-	-
Tipton	142	34	10S	35 $\frac{1}{2}$ E	5100	1-28	19.4	6.9	-	4.5	-	-

POWDER RIVER

Anthony Lake	155	18	7S	37E	7125	1-28	51.3	13.6	8.1	-	-	-
Bourne	154	33	8S	37E	5800	1-30	40.5	7.8	5.7	9.9	8.4	14.4
Dooley Mountain	156	32	11S	40E	5430	1-31	15.2	2.9	0.9	-	-	-
Ellerton Meadows	151B	18	8S	38E	5400	1-30	28.7	9.0	-	5.0	-	-
Gold Center	249	21	9S	36E	5340	1-31	35.8	7.0	4.3	-	-	-

PINE CREEK

Schneider Meadows	161	35	6S	45E	5400	1-28	64.5	17.5	-	21.4	-	-
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TRIBUTARY BASINS (Primary & Secondary & Snow Courses)	LOCATION		SNOW COVER MEASUREMENTS				AVERAGE WATER DEPTH (INCHES)			
			About February 1, 1939							
	Oregon Number	Sec. Twp. Range	Elev.	Date	Avg. Snow Depth (In.)	Avg. Water Depth (In.)	One Month ago (1-1-39)	One Year ago (2-1-38)	Two Years ago (2-1-37)	Three Years ago (2-1-36)
GRANDE RONDE RIVER										
Anthony Lake	155	18 7S 37E	7125	1-28	51.3	13.6	8.1	-	-	-
Aneroid Lake	183	16 4S 45E	7480	1-26	44.9	13.4	-	21.0	9.3	17.3
Beaver Reservoir	188	8 5S 37E	5340	1-24	23.0	8.2	5.8	-	-	-
Moss Spring	186	27 3S 41E	5860	1-30	61.0	18.0	10.4	13.3	-	-
Schoolmarm	248	28 4S 34E	4775	1-30	15.7	3.0	-	-	-	-
WALLA WALLA RIVER										
Toll Gate	212	32 4N 38E	5070	1-26	41.8	14.1	-	9.7	16.6	27.8
UMATILLA RIVER										
Emigrant Springs	222	29 1N 35E	3925	1-25	8.8	2.9	-	1.0	7.5	9.9
Lucky Strike	223	28 3S 32E	5050	1-30	28.1	6.0	-	-	-	-
Meacham	221	24&25 1S 35E	4300	1-25	16.0	4.0	-	2.1	9.3	11.2
WILLOW CREEK										
Arbuckle Mountain	241	33 4S 29E	5400	1-28	25.6	5.4	-	2.8	14.1	10.4
JOHN DAY RIVER										
Arbuckle Mountain	241	33 4S 29E	5400	1-28	25.6	5.4	-	2.8	14.1	10.4
Beech Creek Summit	246A	4 12S 30E	4800	1-28	17.0	4.2	Trace	2.0	4.9	4.9
Blue Mountain Spring	133	21 15S 35E	5900	1-31	36.2	7.4	5.1	9.0	8.2	13.4

TRIBUTARY BASINS

LOCATION

SNOW COVER MEASUREMENTS About February 1, 1939

AVERAGE WATER DEPTH (INCHES)

(Primary & Secondary & Snow Courses)	Oregon Number	Sec. Twp. Range	Elev.	Date	Avg. Snow Depth (In.)	Avg. Water Depth (In.)	One Month ago (1-1-39)	One Year ago (2-1-38)	Two Years ago (2-1-37)	Three Years ago (2-1-36)
DESCHUTES RIVER										
Blue Mountain Summit	141	6 12S 36E	5098	1-30	23.7	5.0	3.7	1.3	6.3	7.8
Gold Center	249	21 9S 36E	5340	1-31	35.8	7.0	4.3	-	-	-
Izee Summit	964	28 16S 29E	5293	1-30	21.4	5.5	2.2	1.7	5.5	9.2
Olive Lake	245	14 9S 33 $\frac{1}{2}$ E	6000	1-30	41.3	7.4	4.7	8.7	8.4	15.6
Schoolmain	248	28 4S 34E	4775	1-30	15.7	3.0	-	-	-	-
Starr Ridge	247	20 15S 31E	5156	1-29	14.9	1.9	1.3	0.9	4.4	5.6
DESCHUTES RIVER										
Caldwell Ranch	326	30 21S 8E	4400	1-31	22.2	3.6	-	4.1	-	-
Cascade Summit	321	7 23S 6 $\frac{1}{2}$ E	4880	2-1	64.7	17.4	-	8.8	25.1	N.R.
Charlton Lake	327	23 21S 6E	5750	1-30	53.7	11.3	-	9.0	-	-
Crescent Lake	325	11 24S 6E	4760	2-1	25.0	6.5	-	3.1	11.0	N.R.
Derr	343	14 13S 23E	5670	1-30	23.1	5.0	-	3.2	-	-
Hogg Pass	351	24 13S 7 $\frac{1}{2}$ E	4755	1-29	72.3	20.4	-	15.0	-	-
Marks Creek	344	25 12S 19E	4540	1-27	9.5	2.2	-	0.9	-	-
Ochooco Meadows	341	21 13S 20E	5200	2-1	26.2	5.7	-	N.R.	6.1	13.5
Tamarack	342	8 15S 25E	4800	1-31	15.3	2.8	-	1.7	4.9	-
Three Creeks Meadows	331	3 17S 9E	5600	1-29	34.5	10.1	-	8.2	18.5	N.R.
SANDY RIVER										
Still Creek	451	25 3S 8 $\frac{1}{2}$ E	3700	2-2	38.3	9.6	4.5	6.1	-	-
Phlox Point -Mt. Hood	452	6 3S 9E	5600	2-2	101.1	33.0	22.0	31.8	-	-
CLACKAMAS RIVER										
Peavine Ridge	591	14&15 6S 7E	3500	2-1	35.0	9.6	5.0	6.5	-	-
Clackamas Lake	592	35 5S 8 $\frac{1}{2}$ E	3400	1-31	20.5	5.3	2.4	4.6	-	-

TRIBUTARY BASINS (Primary & Secondary & Snow Courses)	LOCATION			SNOW COVER MEASUREMENTS About February 1, 1939			AVERAGE WATER DEPTH (INCHES)			
	Oregon Number	Sec. Twp. Range	Elev.	Date	Avg. Snow Depth (In.)	Avg. Water Depth (In.)	One Month ago (1-1-39)	One Year ago (2-1-38)	Two Years ago (2-1-37)	Three Years ago (2-1-36)

WILLAMETTE RIVER

Cascade Summit	321	7	23S	6E	5200	2-1	64.7	17.4	-	8.8	25.1	-
Champion	522	12	23S	1E	4500	1-30	68.8	18.0	-	-	-	-
Charlton Lake	327	23	21S	6E	5750	1-30	53.7	11.3	-	9.0	-	-
McKenzie	531	35	15S	7 $\frac{1}{2}$ E	4800	1-25	61.6	21.0	-	-	-	-
Mary's Peak	541	21	12S	7W	3620		No report.					
Waldo Lake	521A	15	21S	6E	5500	1-30	59.4	10.6	-	5.4	-	-

INTERIOR DRAINAGE

HARNEY BASIN

Idylwild Camp	961A	33	20S	31E	5200	1-31	10.0	3.0	1.7	1.6	3.6	8.4
Izee Summit	964	28	16S	29E	5293	1-30	21.4	5.5	2.2	1.7	5.5	9.2
Rock Spring	134	23	18S	32E	5100	1-31	11.7	3.7	1.5	1.3	4.2	8.7
Starr Ridge	247	20	15S	31E	5156	1-29	14.9	1.9	1.3	0.9	4.4	5.6

WARNER LAKE

Camas Creek	911A	5	39S	21E	5720	1-31	23.7	5.4	-	-	-	-
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TRIBUTARY BASINS (Primary & Secondary & Snow courses)	LOCATION		SNOW COVER MEASUREMENTS About February 1, 1939				AVERAGE WATER DEPTH (INCHES)			
	Oregon Number	Sec. Twp. Range	Elev.	Date	Avg. Snow Depth (In.)	Avg. Water Depth (In.)	One Month ago (1-1-39)	One Year ago (2-1-38)	Two Years ago (2-1-37)	Three Years ago (2-1-36)

W E S T C O A S T D R A I N A G E

UMPQUA RIVER

Diamond Lake	743	29	27S	6E	5315	1-31	48.2	12.2	5.4	7.9	15.6	-
No. Umpqua nr. Lake Creek	742	19	26S	6E	4215	Storms	delayed measurements			4.0	14.1	-
Trap Creek	741	1	27S	4E	3900	"	"			5.1	14.4	-
Whaleback	7217	3	31S	2E	5140	1-29	71.2	16.1	-	11.4	-	-
Goolaway Gap	726	32	32S	3W	3000	1-27	2.5	0.5	-	0.0	9.9	0.0
Goolaway Mountain	7215	30	32S	3W	3730	1-27	11.6	2.5	-	1.7	14.3	-

ROGUE RIVER

Althouse	7216	17	41S	7W	4400	2-1	19.9	3.3	-	Trace	18.6	-
Annie Spring	831	19	31S	6E	6018	2-8	109.3	26.5	11.3	22.8	N.R.	37.2
Big Red Mountain	729	33	40S	1W	6500	1-28	45.0	11.0	-	13.2	15.0	27.6
Billie Creek Divide	722	17	36S	5E	6000	1-26	34.9	11.3	-	9.2	17.1	28.0
Fish Lake	725	3	37S	4E	4865	1-26	10.8	3.3	-	6.7	10.1	17.1
Goolaway Gap	726	32	32S	3W	3000	1-27	2.5	0.5	-	0.0	9.9	0.0
Goolaway Mountain	7215	30	32S	3W	3730	1-27	11.6	2.5	-	1.7	24.2	-
Grayback Peak	727	9	40S	5W	6000	1-29	42.4	12.4	-	4.9	21.7	22.1
Hyatt Prairie Reservoir	723	15	39S	3E	4900	1-31	26.9	5.7	-	3.5	13.8	11.1
Little Red Mountain	7210	25	40S	2W	6500	1-28	31.7	7.4	-	7.6	11.4	15.3
Seven Lakes No. 1	7211	3	34S	5E	6800	Storms	delayed measurements			21.8	N.R.	N.R.
Seven Lakes No. 2	7212	26	33S	5E	6200	"	"			15.8	N.R.	N.R.
Silver Burn	7219	30	30S	4E	3720	1-31	33.5	6.4	Trace	3.4	-	-
Siskiyou Summit	723	17	40S	2E	4630	2-4	23.3	4.5	1.5	2.2	8.6	N.R.
South Fork Canal	7218	12	33S	3E	3500	1-31	16.8	3.7	0.0	0.0	-	-
Wagner Butte	7213	1	40S	1W	6800	1-30	28.6	6.4	-	3.9	11.6	13.9
Whaleback	7217	3	31S	2E	5140	1-29	71.2	16.1	-	11.4	-	-

TRIBUTARY BASINS		LOCATION		SNOW COVER MEASUREMENTS				AVERAGE WATER DEPTH (INCHES)			
(Primary & Secondary & Snow Courses)		Oregon Number	Sec. Twp. Range	Elev.	Date	Avg. Snow Depth (In.)	Avg. Water Depth (In.)	One Month ago (1-1-39)	One Year ago (2-1-38)	Two Years ago (2-1-37)	Three Years ago (2-1-36)
KLAMATH LAKE BASIN											
Annie Spring		831	19 31S	6E	2-8	109.3	26.5	11.3	22.8	N.R. 8	37.2
Beatty 2/			22 36S	12E	1-31	6.5	1.2	0.0	0.0	1.5	0.6
Billie Creek Divide		722	17 36S	5E	1-26	34.9	11.3	-	9.2	17.1	28.0
Chemult No. 1		834	21 27S	8E	2-1	20.3	5.3	1.0	4.1	7.0	-
Chemult No. 2 2/			21 27S	8E	1-31	20.0	3.2	0.0	5.1	6.3	9.4
Chiloquin 2/		34	34S	7E	1-31	6.0	1.6	0.0	1.7	4.2	N.R.
Crowder Flat (California)		30	47N	17E	1-30	8.0	1.3	-	-	-	-
Crystal 2/		26	34S	6E	1-31	16.0	4.2	0.6	1.7	8.1	9.0
Fort Klamath 2/		22	33S	7E	1-31	12.2	2.8	0.0	2.5	4.6	6.8
Hyatt Prairie Reservoir		723	15 39S	3E	1-31	26.9	5.7	-	3.5	13.8	13.0
Kirk 2/		1	33S	7E	1-31	11.0	2.0	0.0	2.1	6.0	13.5
Lake of the Woods No. 1		835	11 37S	5E	1-31	22.4	3.5	1.2	3.3	5.8	-
Lake of the Woods No. 2 2/			15 37S	5E	1-31	32.0	7.2	3.0	5.0	11.0	16.5
Quartz Mountain 2/		33	37S	16E	1-31	19.0	6.5	0.0	3.4	4.5	9.5
Pelican 2/		10	36S	6E	1-31	11.0	1.9	0.0	1.0	5.5	4.0
Richardson Ranch 2/		22	35S	14E	1-31	5.5	1.0	0.0	1.9	3.5	4.8
Rocky Point 2/		26	35S	6E	1-31	7.0	1.2	0.0	1.0	5.2	4.5
Seven Lakes No. 1		7211	3 34S	5E	Storms	delayed measurements	"		21.8	N.R.	N.R.
Seven Lakes No. 2		7212	26 33S	5E	"	"	"		15.8	N.R.	N.R.
Summer Rim		841	15 33S	16E	"	"	"		N.R.	8.3	-
Sun Mountain		836	22 32S	7E	1-31	50.4	12.1	7.0	10.9	-	-
Taylor Butte		842	16 33S	11E	2-2	15.5	2.4	-	2.2	3.3	-
Yamsey 2/		19	30S	11E	1-31	4.5	0.6	0.0	0.5	6.2	1.1
Strawberry		837	4 40S	16E	1-29	17.3	5.2	-	4.0	-	-
Quartz Mountain		811	2 38S	16E	1-31	14.8	2.2	0.0	N.R.	4.1	11.2
GOOSE LAKE BASIN											
Camas Creek		911A	5 39S	21E	1-31	23.7	5.4	-	-	-	-
Quartz Mountain 2/		33	37S	16E	1-31	19.0	6.5	0.0	3.4	4.5	9.5
Quartz Mountain		811	2 38S	16E	1-31	14.8	2.2	0.0	N.R.	4.1	11.2
Strawberry		837	4 40S	16E	1-29	17.3	5.2	-	4.0	-	-

